



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,143	10/27/2003	Huitao Luo	200310055-1	3278
22879 7590 06/02/2008 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400				
EXAMINER				
CARTER, AARON W				
ART UNIT		PAPER NUMBER		
2624				
NOTIFICATION DATE		DELIVERY MODE		
06/02/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM

mkraft@hp.com

ipa.mail@hp.com

Office Action Summary

Application No.

10/694,143

Applicant(s)

LUO, HUITAO

Examiner

AARON W. CARTER

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Examiner Note

1. This action is being filed to replace the action mailed on 4/24/08. This action is being filed to make light of additional rejections under 35 USC 101 that were realized after the rejection mailed on 4/24/08 was sent out.

Response to Amendment

2. In response to applicant's amendment received on 1/31/08, all requested changes to the claims have been entered.

Response to Arguments

3. Applicant's arguments with respect to claims 1-37 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions."

The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 18-31 and 37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 18 and 31 define a "system".

However, while the preamble defines a "system", which would typically be indicative of an "apparatus", the body of the claim lacks definite structure indicative of a physical apparatus.

Furthermore, the specification indicates that the invention may be embodied as pure software, see the Specification, page 3, line 25 – page 4, line 5. Therefore, the claim as a whole appears to be nothing more than a "system" of software elements, thus defining functional descriptive material per se.

Functional descriptive material may be statutory if it resides on a "computer-readable medium or computer-readable memory". The claims indicated above lack structure, and do not define a computer readable medium and are thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines

Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests:

1. Amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory; or
2. Adding structure to the body of the claim that would clearly define a statutory apparatus.

Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-37 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 6,243,492 to Kamei.

As to claim 1, Kamei discloses a method of assessing image quality, comprising:

Detecting a target object region in an input image, wherein the detecting is performed on image data derived solely from the input image without regard to image data derived from any

image other than the input image (*column 13, lines 22-34, wherein a sub-region corresponds to a target object region*);

Generating an image quality feature vector representing the target object region in an image quality feature space, wherein the generating comprises generating the image quality feature vector from image data derived solely from the input image without regard to image data derived from any image other than the input image (*column 13, lines 8-65, wherein the quality vector corresponds to the image quality feature vector*); and

Mapping the image quality feature vector to a measure of image quality (*column 13, line 66 – column 14, line 20, wherein the calculating of error distribution information corresponds to mapping the image quality feature vector to a measure of image quality*).

As to claim 2, Kamei discloses the method of claim 1, wherein the detecting comprises detecting a human face in the input image (*column 1, lines 15-23 and column 3, lines 15-30*).

As to claim 3, Kamei discloses the method of claim 1, wherein the detecting comprises detecting an object relevant to a person's subjective assessment of image quality in the input image (*column 13, lines 22-34, wherein a sub-region corresponds to an object relevant to a person's subjective assessment of image quality in the input image*).

As to claim 4, Kamei discloses the method of claim 1, wherein the detecting comprises detecting the target object region based on a sub-sampled version of the input image (*column 28, line 40 – column 29, line 30 and Fig. 17*).

As to claim 5, Kamei discloses the method of claim 4, wherein the generating comprises generating the image quality feature vector based on a version of the target object region at a resolution of the input image (*column 11, lines 52-60, column 30, lines 29-36 and Fig. 1, element 106*).

As to claim 6, Kamei discloses the method of claim 1, wherein the detecting comprises detecting the target object region based on a first set of features of the input image (*column 11, lines 52-60, wherein the sub-region is detected based on pixel location*), and the generating comprises generating the image quality feature vector based on a second set of features of the input image different from the first set of features (*column 13, lines 1-11, wherein the image quality feature vector is generated based on, for example, ridge direction*).

As to claim 7, Kamei discloses the method of claim 6, wherein the first set of features is substantially decoupled from the second set of features (*column 11, lines 52-60 and column 13, lines 1-11*).

As to claim 8, Kamei discloses the method of claim 1, wherein the image quality feature space is spanned by multiple features including at least one brightness feature describing a respective brightness characteristic of the target object region (*column 13, lines 1-7*).

As to claim 9, Kamei discloses the method of claim 1, wherein the image quality feature space is spanned by multiple features including at least one spectral feature describing a respective spatial frequency characteristic of the target object region (*column 13, lines 1-7*).

As to claim 10, Kamei discloses the method of claim 9, wherein generating the image quality feature vector comprises decomposing the target object region into multiple wavelet transform sub-bands (*column 13, lines 1-7, column 28, line 40 – column 29, line 30 and column 30, lines 29-36*).

As to claim 11, Kamei discloses the method of claim 10, wherein each spectral feature describes energy in a respective wavelet transform sub-band (*column 13, lines 1-7, column 28, line 40 – column 29, line 30 and column 30, lines 29-36*).

As to claim 12, Kamei discloses the method of claim 1, wherein the image quality feature space is spanned by multiple features including at least one noise feature describing a respective noise characteristic of the target object region (*column 21, lines 20-59*).

As to claim 13, Kamei discloses the method of claim 12, wherein a noise feature is computed based on a measure of noise in the target object region (*column 21, lines 20-59*).

As to claim 14, Kamei discloses the method of claim 12, wherein a noise feature is computed based on a measure of spatial homogeneity of spectral features each describing a respective spatial frequency characteristic of the target image region (*column 21, lines 20-59*).

As to claim 15, Kamei discloses the method of claim 1, wherein the image quality feature vector is mapped to a measure of image quality in accordance with a machine learning process (*column 13, line 66 – column 14, line 20*).

As to claim 16, Kamei discloses the method of claim 15, wherein the image quality feature vector is mapped to a measure of image quality in accordance with a radial basis function based machine learning process (*column 13, line 66 – column 14, line 20*).

As to claim 17, Kamei discloses the method of claim 15, wherein the image quality feature vector is mapped to a measure of image quality in accordance with a mixture of Gaussian based machine learning process (*column 13, line 66 – column 14, line 20*).

As to claim 18, please refer to the rejection of claim 1 above.

As to claim 20, please refer to the rejection of claim 4 above.

As to claim 21, please refer to the rejection of claim 8 above.

As to claim 22, please refer to the rejection of claim 9 above.

As to claim 23, please refer to the rejection of claim 10 above.

As to claim 24, please refer to the rejection of claim 11 above.

As to claim 25, please refer to the rejection of claim 12 above.

As to claim 26, please refer to the rejection of claim 13 above.

As to claim 27, please refer to the rejection of claim 14 above.

As to claim 28, please refer to the rejection of claim 15 above.

As to claim 29, please refer to the rejection of claim 16 above.

As to claim 30, please refer to the rejection of claim 17 above.

As to claim 31, please refer to the rejection of claim 1 above.

As to claim 32, please refer to the rejection of claim 1 above.

As to claim 33, please refer to the rejection of claim 1 above.

As to claim 35, please refer to the rejection of claim 8 above.

As to claim 36, please refer to the rejection of claim 9 above.

As to claim 37, Kamei discloses the system of claim 18, further comprising a computer-readable storage medium and a computer processor (*column 14, lines 37-51*).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON W. CARTER whose telephone number is (571)272-7445. The examiner can normally be reached on 8am - 4:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron W Carter/
Primary Examiner, Art Unit 2624